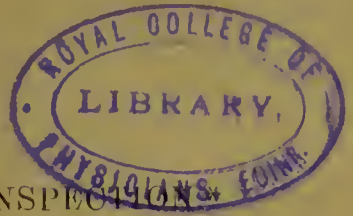






*With the Author's compliments.*

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## THE DEVELOPMENT OF MEAT INSPECTION.

By STEWART STOCKMAN, M.R.C.V.S., Professor of  
Pathology, Dick College.

IN approaching this subject, much of which is buried in religious antiquity, I do not mean to pose as a Biblical scholar. One may, however, be allowed to take at least an amateur's interest in the customs of early civilisation in the East, whence have emanated many of the rules devised for the health of our souls, and some of those elaborated for that of our bodies. Moses undoubtedly learned much concerning hygiene from the Egyptians during the captivity; indeed, he had great opportunity, for we are told that at this instance the land was visited by ten plagues in the space of about twenty-five days. Many medical writers, however, have credited Moses with a knowledge of pathology and hygiene far in advance of his time, but I am bound to confess that the evidence brought forward in favour of Moses' highly scientific attainments is often shadowy, to say the least of it. Moreover, in the writings of some of the most distinguished scholars one finds that the supposed medical aspect of the laws relating to animals—the subject that concerns me at present—is hardly discussed. It is often asserted in medical books that the pig was excluded from consumption in the Levitical laws, because it was known to Moses that swine flesh was often measled (as we now call it), and might infect human beings with tapeworm. It is unlikely that Moses was the originator of the laws referred to; there were lawgivers and traditions before his day, and it is in the evolution of these traditional ideas that the explanation of the laws relating to the flesh of animals seems to lie.

The portion of Leviticus which deals with the subject was compiled by the writer of the Law of Holiness somewhere about eight hundred years or more after the death of Moses; but the writer was not the originator; he did

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little more than record the traditional laws which before his time were perpetuated and probably modified by the practices of generations. Once the laws were written, of course their development would be checked. It might be argued that the successors of Moses applied the laws relating to animals for medical reasons, but nobody would credit such a suggestion, because all the evidence points to them having a religious significance; they are, in fact, part of the ritual.

The solution of the question hangs on the origin of the idea of uncleanness as applied to animals. Robertson Smith, in his 'Burnet Lectures' (1888-9), traces in a most interesting way the evolution of ideas which men held regarding their relation to animals. I wish here to state that I am indebted to his works for a great deal of information.

In the earlier days when ritual was of the most primitive kind, there was a time when an animal's life was held sacred on account of the kinship which was supposed to exist between men and gods and beasts. Animals were only slaughtered for a sacrificial meal, in which the god was supposed to partake along with his worshippers. This seemed to justify the slaughter. As the desire for animal food increased, however, the sacrificial character of the slaughter was relaxed, except with regard to certain species of animals which were held peculiarly sacred. They were deemed so because of their supposed kinship with families of men, and their relationship to the god.

At the present day one finds it hard to understand how any family of human beings could foster the idea of their relationship to the pig, or consider the species divine. To-day, although no one denies that evolution is a factor in our development, great difference of opinion comes in when we attempt to determine what we are evolved from. Once the latter relationship was established in men's minds, however, the former would become much easier to accept. There is plenty of evidence to show that such beliefs were held and acted upon in the days of early paganism, and that the traditional ceremonies survived long after the reason for them had been discredited. Even now savage totem tribes exist in Africa, and it is hinted by some authorities that their ideas may have originally come from the same source as those of the Semitic races. It is to be observed that the animal held sacred was not always of the same species. In Egypt it was the dog, especially at Cyanopolis (Anubis was worshipped as the representative

of the dog). Of fish, the eel was held sacred to the Nile by the Egyptians (Herod., ii, 72); it was unclean to the Jews. The Hindoos regard the cow as sacred; the Shin caste of Dards abhor it. The Kaffir used the ox, as we do a sheep-dog, to herd and protect his flocks.

Besides the supposed relation of animals to gods, there was another reason why certain of them were to be avoided, viz. that they were associated with the presence of dreaded spirits. In the 'Book of the Dead' (Birch's translation) we find that the Egyptians considered the pig unclean because the demon Set appeared in that form (Hastings' 'Dict. of the Bible,' art. Food). Herodotus (ii, 47) hints at a reason, but says it would be unbecoming to mention. Herodotus frequently makes this excuse for not referring to religious matters. We see, then, that among the ancients, restrictions were put on certain animals for two reasons: first, on account of holiness, *i. e.* the relationship to gods; and second, because of ill-disposed spirits dwelling within them, *i. e.* uncleanness. The two, however, own a common root idea, and, as Robertson Smith points out, the law of clean and unclean in Levitical legislation almost meets that of holiness, since uncleanness was considered hateful to God. An unclean person could not approach the sanctuary.

In time of famine, and on special occasions, the totem was slaughtered and eaten by its human relations, but with many lamentations and apologies, which must have done much to soften the blow. Similarly, sacred and unclean animals were eaten when food was scarce, and on specially solemn occasions they were employed for mystic sacrifices to certain gods, whose names were associated with the species of animal. In the latter cases the whole community took a hand, and they shared the responsibility of the animal's death, as we to-day share the responsibility of a capital sentence with the judge and our other representatives on the jury. When the Syrians besieged Samaria the beleaguered inhabitants were so short of food that an ass's head was sold for fourscore pieces of silver (2 Kings vi); but the ass neither parteth the hoof nor cheweth the cud. That even human flesh was eaten under the same circumstances we learn from 2 Kings vi, 29, and Lamentations iv, 10. Herodotus tells us (ii, 47) that the Egyptians periodically sacrificed pigs to Isis (the goddess of the moon) and to Bacchus. Pigs also were sacrificed to Demeter, the Greek representative of Isis, and to Ceres, the Roman one, to whom the first temple was vowed by



Postumius Albinus, B.C. 496. It was a moot point with the Greeks whether the Jews abhorred or worshipped pigs (*i. e.* whether they were unclean or holy). In Crete pigs were sacred and not ordinarily eaten; so also was it in Syria. In the Levitical sin-offering the fat was burned at the altar, and the remainder of the flesh was eaten by the priests or burned outside the town. Reasoning from what took place among other peoples, Robertson Smith concluded that this was done in order that there might be no chance of laymen being rendered unclean by coming in contact with anything so holy, for holiness and uncleanness were looked upon as contagious, *i. e.* were capable of spreading from things to men, and from men to others. The more ancient beliefs were that a man who ate unclean beasts, or the totem, would be visited by boils, ulcers, and swellings. Herodotus, however, tells us that the Egyptians considered all diseases to be caused by demons entering the patient, and it is easy to understand how men would fear and shun unclean animals in which demons were supposed to be resident. From this it may well be asked, were not these ideas founded on actual cases of transmission of diseases from animals to man,—tapeworm from pigs' flesh, for example? In the case of the Jews I think not, because perfectly harmless animals and things were regarded as unclean, while ox flesh, which in the East is often measled, was not prohibited. It is stated, however, as a *sine quâ non*, that all sacrificial animals must be free from blemish, and in the light of our present knowledge of pathology this might be, and often is supposed to have had a hygienic bearing. I would point out, however, that deformed animals (without disease) were also excluded, and that the same rules applied to the sacrificial beasts which were not eaten. The inference is, rather, that a second-rate article would not be accepted by the god. Robertson Smith explains that "without blemish" meant that the sacred life was normally embodied in the animal; and I think that this idea persisted long after the intensely sacrificial idea of slaughter had disappeared, owing to the increasing desire for carnivorous diet. Indeed, it persists to-day, for the Rabbi still performs a religious inspection of the carcass. No one can deny that these rules would have the same effect as the inspection performed by Christians for hygienic reasons. The question is, however, did they arise with the ancients from hygienic motives? After a perusal of the writings of some distinguished Biblical scholars, and those of ancient travellers like Herodotus, I

have concluded that they did not. Moreover, if any such idea did exist, it does not appear in the teaching of Christ (*vide* Matt. xv, 11). "There is nothing from without that entereth into him that can defile him," etc. This was in reply to those who held out for traditional worship by the law.

Paul characterised as doctrines of devils the commandments to abstain from meats which God created (1 Tim. iv). It is true that the weak-kneed Christians in Antioch and Syria were told to abstain from blood and things strangled; but that was a diplomatic stroke to make things easier for them (Paul, 1 Cor. viii, 1).

The Levitical law demands that the blood be poured out, and the same idea is at the bottom of the injunction to abstain from the flesh of strangled animals and those torn by beasts. I do not think, however, that anyone denies the religious significance of these prohibitions; the blood is a thing too holy for men to touch. All doubt on the subject is dispelled in Lev. xvii, 11, 12, "For the soul of all flesh is in the blood," etc. In verse 12 even the stranger must not partake of blood, presumably because of the supposed contagious nature of uncleanness. In Deut. xiv, 21, it was allowed to sell to the stranger the flesh of an animal that had died of itself. If the Jews who practised this considered that such flesh was hurtful to health, they were certainly not of a Christian disposition, although the same reproach might be attached to our present irregular system of inspection. Animals considered likely to be seized in an efficiently inspected abattoir are sent to the many places where the inspection is performed by retired stone-masons, plumbers, and others of the same character. The prohibition against eating the caul fat and that of the kidney seems to have originated from similar ideas. We pour out the blood now, because bled meat keeps better and is less repulsive. The carcasses of animals which have been trampled to death (suffocated) by others in railway trucks—these carcasses come too frequently into our abattoirs—are seized, because they are considered unmarketable.

Curious ideas concerning the toxic properties of blood were abroad in ancient times. Psammenites, king of Egypt, came by his death through being forced to drink bull's blood (Herodotus, iii, 15). Themistocles (449 B.C.) is reported to have committed suicide by drinking the blood of a bull. King Midas is said to have had a similar end (Strabo). The idea probably originated in Egypt,

where male kine were held sacred. Pliny (A.D. 23—79), quoting from Nicander (B.C. 185—135), prescribes radishes (? cabbage) as an antidote to bull's blood (Pliny, xx, 13), and in xxxi, 47, a combination of nitrum and laser is recommended. In Book xi, 91, he says that bull's blood coagulates and hardens the most speedily of all, and hence it is so particularly deadly when drunk. Again, we are told that bull's blood is reckoned among the poisons except at Ægira, where the Priestess of the Earth took a draught of bull's blood when about to foretell coming events (xxvii, 41). Here the supernatural connection is still retained. Pliny also tells us that he-goat's blood was used for sharpening instruments; the rust that forms makes them sharper than any file can.

Paulus Ægineta (seventh century A.D., *De Re Medica Libri Septem*, v, 54, Adams) writes that if the blood of a newly killed bull be drunk it brings on dyspnœa and suffocation, obstructing the passages about the tonsils and the parts concerned in deglutition, with violent spasm. I have been told that ladies in South America drink warm defibrinated blood to improve the complexion. Out of curiosity I have myself tasted bull's blood, so I may be considered a living protest against the want of veracity in the statements of the ancients. A good case can be made out even for a religious meaning of the injunction against putrefying flesh, but I am quite willing to credit Adam with a knowledge of what appealed to him through his senses.

I have often heard it said by irresponsible persons—indeed, the saying is not limited to a small circle—that Jews enjoy to-day a greater freedom than other people from tuberculosis owing to their observance of the laws relating to animal flesh; some will even assert that the communicability of this disease from animals to human beings was suspected by Moses.

Putting aside altogether the fact that animal flesh is one of the smallest factors in the spread of tuberculosis, the Jews to-day enjoy no such immunity from this plague of civilisation. That they met with tuberculosis in cattle I quite believe, but I do not think that a strong case is made out by those who quote Lev. xxii, 22, as proving its existence. The verse referred to prohibits offering animals with running sores—running sore is the rendering given in the most recent English translation (the Polychrome Bible, "Leviticus," by the Rev. R. S. Driver, D.D., and the Rev. H. A. White, M.A., 1898). I should prefer to hold my opinion on the grounds that the lungs are exa-



mined by the Rabbi before the animal is passed as free from blemish.

In the Gemara (fifth century A.D.) there are references to lesions which must have been tuberculous.

Let us return now to the measled pig, for he is the chief witness for the defence.

In warm climates fresh (not preserved) pork seems often to be the cause of serious internal disturbance of a kind that would be quite intelligible to the most primitive mind; even children are able to correlate the sequence of events which follow upon certain repasts. At the present day it is forbidden in some places to slaughter pigs for food during the hot season—Monaco, Spain, Greece (Morot).

It is unlikely, however, that Moses ever had the opportunity of studying the effects of pork, measled or healthy, on human beings, because the pig is one of the most ancient of the taboos. We gather from the writings of Aristophanes (B.C. 444—380) that measles was known to the Greeks in his time ('The Knights,' Hickie's Aristoph., vol. i, p. 70): "And, by Jove, we will put a skewer into his mouth in cook's fashion, and then draw out his tongue from within, and examine his inside well and manfully, while he gapes, if it be pimply."

Herodotus (ii, 38) tells us that at Memphis kine were sacred to Epaphus. The priest pulls out the tongue and examines it to see if it is pure as to the right marks. Herodotus, again (iii, 28), tells us that the calf Apis must have on its back the figure of an eagle in white against the black background of the coat, and on the tongue a black mark in the form of a beetle. I find in Smith's classical dictionary that the mark on the tongue is said to be like the insect cantharus. That is not the least like measles; besides, it had to be present at birth, and measles is never found then. There are no grounds, therefore, for supposing that Apis was a measled calf.

Tapeworms were known in Hippocrates' time (460 B.C.), probably long before him; but according to Leukart they were chiefly the *T. saginata* (ox infection). Hippocrates, however, states that pork is a healthy and nutritious food (Celsus). Bladderworms or measles were described by Aristotle (384—327 B.C., Arist. 'Hist. Animal.' viii, 21), but it was not until the end of the seventeenth century that their animal nature was suspected (Redi, 1683). Aristotle also mentions flat-worms (*ibid.* v, 17).

The connection between the bladderworms (measles)

and the *tæniæ*, however, was not thought of until 1760, when Pallas wrote on the subject, and it was only in 1854 that Kuchenmeister experimentally established that pork measles (*Cysticercus cellulosæ*) was the cause of *Tænia solium* in human beings.

The evidence of comparative pathology, then, renders it still more doubtful that the Levitical laws had a hygienic origin. The probable frequency of bladderworms in the pig would have prevented many of these animals from being regarded as "without blemish;" but it is difficult to believe that the species was tabooed on this account, for the bovine animal, a species not proscribed, was frequently the host of bladderworms.

Spencer ('De Legibus Judæarum,' cap. 31) discusses the ideas of several ancient writers on this subject. Most of their opinions, however, are purely speculative.

The Koran (Mohammed, 570—632 A.D.) contains many restrictions on the use of animal flesh, which, with a few exceptions, are similar to those imposed by the Jewish doctrines. It is forbidden to eat that which hath died of itself, blood, things strangled, flesh of animals torn by wild beasts, and swine flesh; but it was no crime to eat such things in time of famine (Sale's 'Koran,' chap. ii, p. 18; chap. v, p. 73; chap. vi, pp. 90 and 100; chap. xvi, p. 205). In chapter vi, pp. 101-2, the precepts of idolaters regarding certain flesh are condemned. Presumably they were wrong, because those who held them were not of the faith. The other restrictions seem to have been founded on ancient prejudice. Certainly no mention is made of a hygienic reason in the Koran.

Let us now examine further the evidence furnished by tuberculosis. It was not until 1865 that Villemin demonstrated that tuberculosis of animals and human beings could be conferred by inoculation; and most of our present knowledge regarding this disease dates from Koch's discovery of the tubercle bacillus in 1882.

Still, tuberculosis in animals killed for human food engrossed the attention of hygienists in Europe in the eleventh century, as it does to-day.

The laws of the Church in the Franconian part of Germany then forbade the use of flesh from tuberculous(?) oxen (Friedberger and Frohner, Fr. trans., Cadiot and Ries).

In 1363 letters patent of King John of France decreed against the use of tuberculous flesh (Morot, quoted by Moreau).

At Munich, in 1370, the sale of the flesh from tuberculous animals was forbidden; other German towns followed the example of Munich (Friedberger and Frohner, *op. cit.*).

The seventeenth century was marked in the various parts of Germany by the alternate enactment and abrogation of laws regarding the use of flesh from tuberculous animals.

In the early part of the century a relation was traced between tubercle and syphilis, and this led to a wholesale destruction of tuberculous carcasses. In 1783, however, the Sanitary College of Berlin denied the supposed relationship, with the result that the embargo was removed. During this controversy on sanitary politics, Dr. Zweirlein publicly drank in the market-place of Bruckenaу a broth made from tuberculous material. I do not know if Zweirlein developed tuberculosis, possibly he did not; but I know of a good many animals which have come by their death in this way, and it is beyond dispute that many human beings have died from ingestion of tubercle-infected material. I knew a man who had a mania for swallowing material of this kind, though I never heard him say he had eaten tuberculous matter. He has a young family now. They drink cooked milk, and are not allowed to play with stray dogs.

The Fifth International Congress of Veterinarians, held at Paris in 1889, voted almost unanimously for the total seizure of tuberculous flesh. The Sixth Congress, 1896, was much more moderate in its finding. To-day nobody denies the possibility of human beings contracting tuberculosis by eating infected material; the question is under what circumstances is the flesh of a tuberculous animal likely to contain tubercle bacilli?

We know this pretty well now, but many municipal communities still prefer either to do without inspection or to condemn large quantities of harmless flesh rather than appoint an efficiently qualified Meat Inspector. I am of opinion that a code of laws dealing with this subject is necessary. I do not think it possible, however, to devise a workable code, unless it be on the most general lines. Such a one would fulfil all requirements, if there were scientifically trained inspectors to interpret it. Without prejudice, I hold that the veterinary surgeon is, from his education, the only one who at present is capable of doing this with equal justice to the butcher and the public.

The Corporation of Edinburgh has reason to be proud

of the part it has taken in the advancement of meat inspection. Not only has it acted as the guardian of a veterinary school, but it was the first municipal body to organise a qualified staff of meat inspectors, and it has been able to supply them to other towns, which are beginning to see the wisdom of appointing suitably educated officers.

The report of the Tuberculosis Commission (1898) says:

“We may add that, in the Edinburgh Public Slaughterhouse, we witnessed meat inspection carried on more nearly on the enlightened system of the best Continental abattoirs than it was our fortune to see in any other part of the United Kingdom. Here there are six meat inspectors, of whom four are veterinary surgeons; one has been a butcher, and one a cattle salesman. We were very favourably impressed with the organisation, though the standard by which the meat of tuberculous carcasses was judged appeared to us unnecessarily severe.” (Report, p. 7, sect. 21.)

I would like here to state that the present condition of things in Edinburgh is largely due to the advice given to the Corporation by the late Professor Walley, Principal of the Dick College.

Still, there is room for improvement. The booth system—the one in use here—is inferior to the central hall system; but, of course, this could not be changed unless new premises were being constructed. The inspectors, however, might be provided with a properly equipped laboratory in which to make their more particular examinations. This could be done at very little expense.

In England and Wales the inspection of meat is provided for in the Public Health Act of 1875.

In Scotland prior to the latest Act, Public Health (Scotland) Act, 1897, the question was dealt with under Police and Improvement (Scotland) Act, 1862, 25 and 26 Vict., cap. 101, sect. 272, and partly by the Edinburgh Municipal Police Act, 1879. The Burgh Police Act (Scotland), 1892, gives the authorities power to abolish private slaughterhouses by providing a public abattoir.

In Ireland the law is similar to that of England.

Many municipalities throughout the country have had special clauses inserted in acts of their own. In none of our slaughterhouses are the inspectors supplied with proper laboratories, where they can confirm their diagnosis by microscopic and other examinations. The importance of the microscope in meat inspection is too evident to require explanation, but it is worse than useless in the hands of the untrained.



The development of our use of salt with meat is intimately connected with that of man's civilisation. Purely carnivorous animals and men display no desire for sodium chloride; but as the wandering tribes began to settle on the soil, and eat vegetables, the desire for salt came. They even added it to their cereal offerings (Levit.). Bunge ('Physiological and Pathological Chemistry, Lecture vii) traces this desire to the amount of potassium swallowed by eaters of vegetables. Potassium, he says, causes the excretion of sodium chloride. According to Bunge, then, the craving for salt is a request by the tissues that this loss should be made good. Quoting Ditmar, he describes how the Russian Government failed to get the Kantschatdales to use salted instead of rotten fish from their silo pits. The Kantschatdales are ichthyophagous, and they positively loathe salt. The primitive vegetarian races, on the contrary, crave for sodium chloride. Mungo Park stated that the negroes on the coast of Sierra Leone would barter their wives for it (Bunge, *op. cit.*).

The question of our right to kill and eat animals is one of great antiquity. Even to-day the right is not unanimously admitted. We see it in the ancient idea of the "Golden Age," and at present it appears in a few conscientious abstainers from flesh.

At the Diipolia, when an ox was slain, the participators were tried for the offence. The blame was shifted on to the man who used the knife, but ultimately it was settled on the weapon, which was cast into the sea as a murderer. To-day the doubting flesh-eaters quote Gen. i, 28, in justification of their act.

Personally I eat meat twice daily, and I believe that the future is for the flesh-eating nations, but I strongly think that a great deal could and should be done to render the killing more humane. Every animal, large or small, should be stunned before being bled. I do not think that a desire for a small additional degree of lighter tint in the flesh is a sufficient reason for making an animal suffer great pain, nor do I admit that preliminary stunning makes any material difference in the amount of blood which can be extracted from the body. I have no intention of rousing public indignation by harrowing details, for I believe the object can be gained by a simple mention to the right authorities. I am aware, too, that many butchers pay due regard to the sensory nerves of the victims of slaughter, but I hold that in every abattoir the most humane method of slaughter ought to be enforced.



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